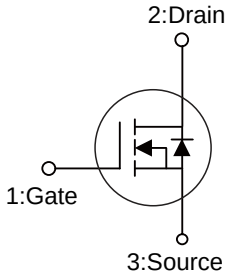
■ PRODUCT CHARACTERISTICS

V_{DSS}	100V
$R_{DS(ON)}$Typ(@V_{GS}=10V)	1.9mΩ
Qg@typ	102nC
I_D	250A

Symbol



■ APPLICATIONS

* High efficiency switch mode power supplies
* Electronic lamp ballasts based on half bridge
* LED power supplies



TO-220

■ FEATURE

* High Switching Speed
* Improved dv/dt capability

■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT250N10A	TO-220	50 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS(T_A=25°C,unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	±20	V
Drain Current Continuous(@V_{GS}=10V,T_A=25°C)	I_D	250	A
Drain Current Continuous(@V_{GS}=10V,T_A=100°C)	I_D	157	A
Drain Current Pulsed	I_{DM}	1000	A
Avalanche Energy *	E_{AS}	1521	mJ
Power Dissipation	P_D	270	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	0.46	°C/W

Note: * EAS condition: T_J=25°C,V_{DD}=50V,V_G=10V,L=0.5mH,R_g=25Ω

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V_{DSS}	V_{GS}=0V,I_D=250μA	100	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{DS}=0V, V_{GS}=+20V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{DS}=0V, V_{GS}=-20V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A	-	1.9	2.4	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	2	2.8	4	V
Dynamic characteristics						
Gate Resistance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	1.6	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=5A	-	23	-	S
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V f=1.0MHz	-	9715	-	pF
Output Capacitance	C_{oss}		-	1490	-	pF
Reverse Transfer Capacitance	C_{rss}		-	55	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	I_D=20 A, V_{DS}=50V R_G=2.5 Ω ,V_{GS}=10V	-	25	-	ns
Rise Time	t_r		-	45	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	86	-	ns
Fall Time	t_f		-	70	-	ns
Total Gate Charge	Q_g	I_D=20 A, V_{DS}=50V V_{GS}=10V	-	102	-	nC
Gate to Source Charge	Q_{gs}		-	24	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	22	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	250	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	1000	A
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V	-	0.67	1.2	V
Reverse Recovery Time	t_{rr}	I_{SD} =20 A, T_J=25 °C dI/dt=100A/μs	-	80	-	ns
Reverse Recovery Charge	Q_{rr}		-	102	-	μC

■ TYPICAL CHARACTERISTICS

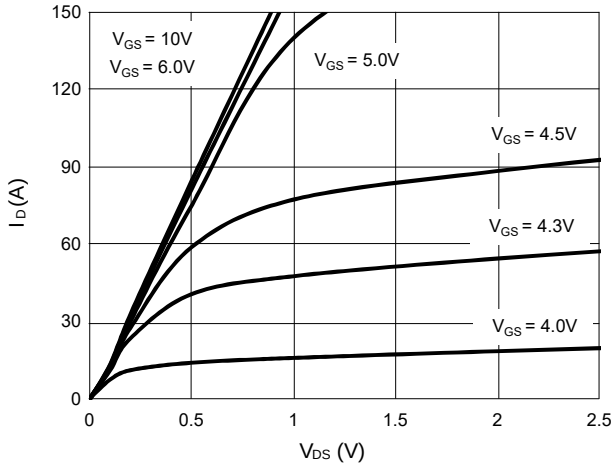


Figure 1: Saturation characteristics

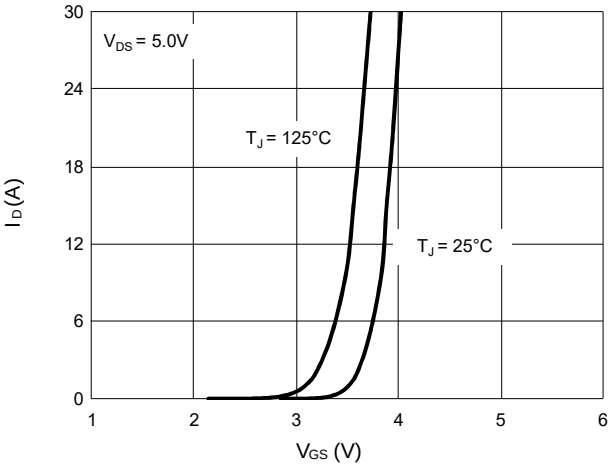


Figure 2: Transfer characteristics

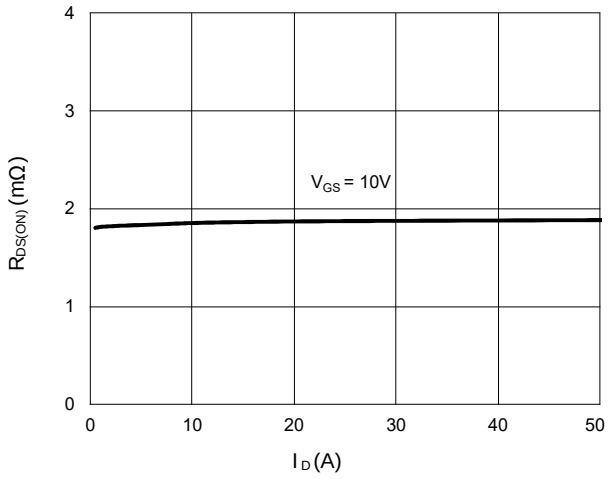


Figure 3: $R_{DS(ON)}$ vs. drain current

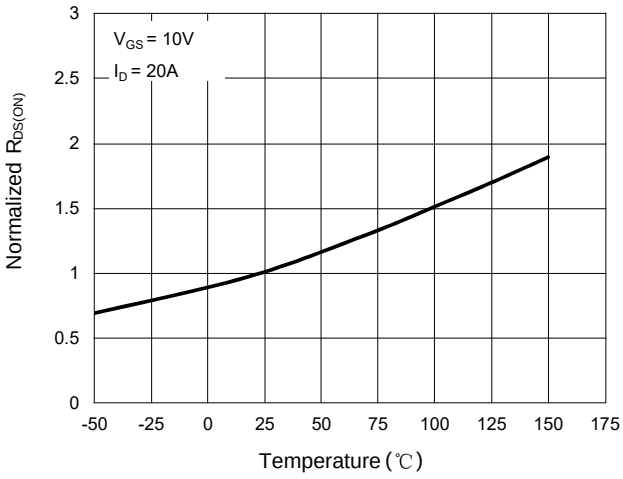


Figure 4: $R_{DS(ON)}$ vs. junction temperature

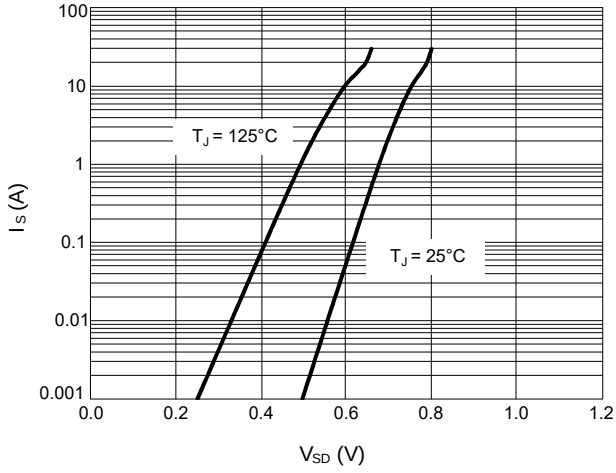


Figure 5: Body-diode characteristics

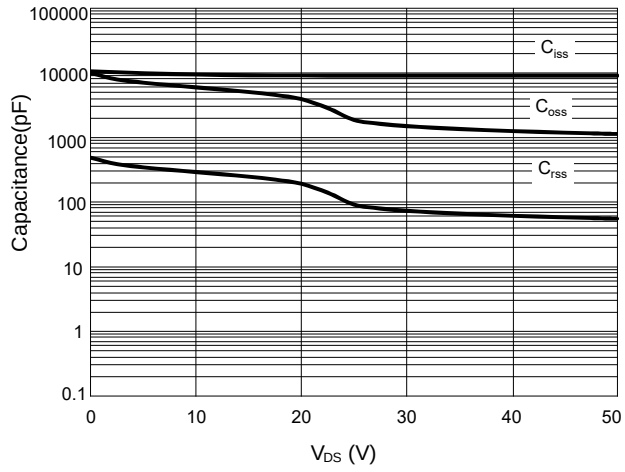


Figure 6: Capacitance characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

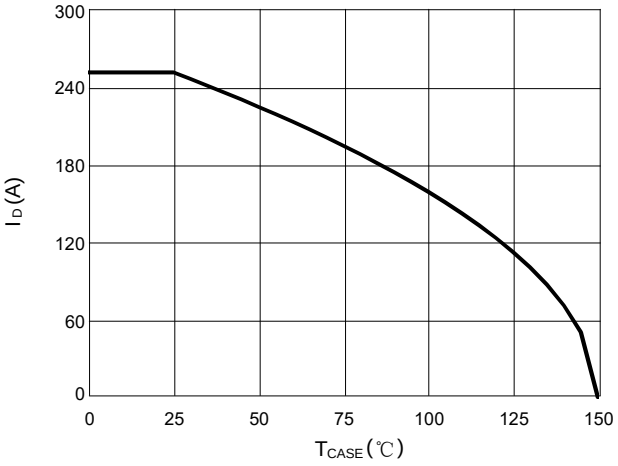


Figure 7: Current de-rating

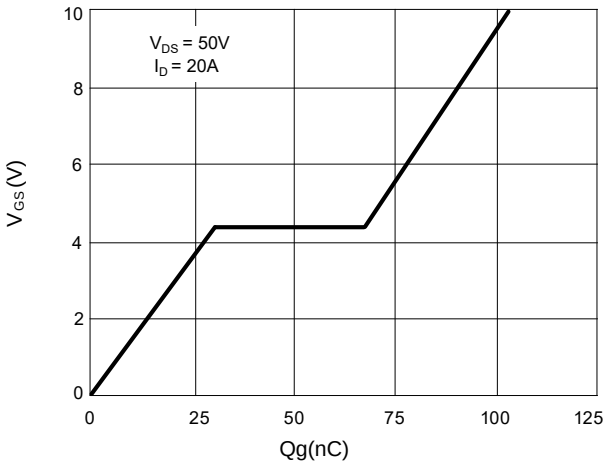


Figure 8: Gate Charge

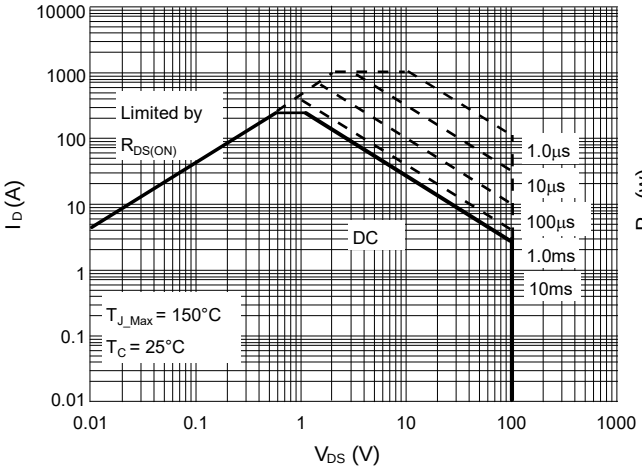


Figure 9: Maximum safe operating area

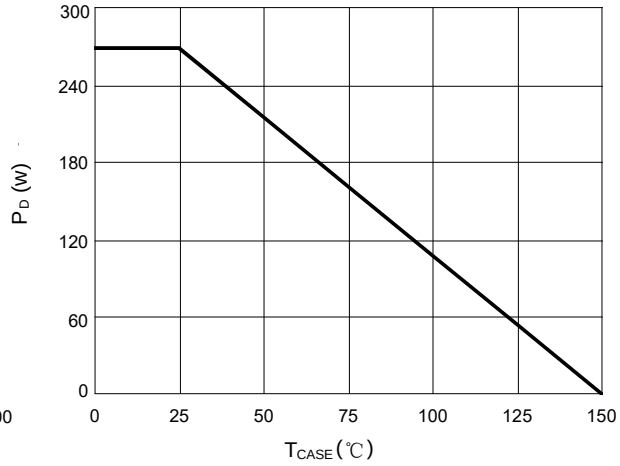


Figure 10: Power de-rating

■ TO-220 PACKAGE OUTLINE DIMENSIONS

